



Explosives Detection

Advanced Planning Briefing For Industry
February 21, 2006

Technical Support Working Group
Combating Terrorism Technology Support Office
(CTTSO)



Mission

Identify, prioritize, and execute research and development projects that satisfy interagency requirements for existing and emerging technologies in explosives detection and diagnostics. Emphasis is placed on a long-term, sustained approach leading to new and enhanced technologies for detection and identification of improvised explosive devices and large vehicle bombs.



Subgroup Membership

Department of Defense

U.S. Army

Training and Doctrine Command

U.S. Air Force

Electronic Systems Command

Air Force Research Laboratory

U.S. Navy

Naval Explosives Ordnance Disposal Technology
Division

Defense Intelligence Agency

Office of the Secretary of Defense

Department of Energy

Office of Security

Department of Homeland Security

Science and Technology

Transportation Security Administration

Federal Air Marshals Service

U.S. Coast Guard

U.S. Secret Service

Technical Security Division

Department of Justice

Bureau of Alcohol, Tobacco, Firearms and
Explosives

National Institute of Justice

U.S. Postal Service

U.S. Postal Inspection Service

Department of State

Bureau of Diplomatic Security

Department of Transportation

Federal Aviation Administration

Federal Motor Carrier Safety Administration

Federal Railroad Administration

Volpe National Transportation Systems
Center

Intelligence Community



Terminology

Standoff Detection:

Target is downfield from operator and sensors

Remote Detection:

Sensors and target are downfield from operator





Terminology

Non-Intrusive Detection:

Does not require opening of vehicle doors, windows, or cargo compartments for system operation



Success Story 2005

- **Airport deployment of trace detection portals**
 - **Transportation Security Laboratory (Atlantic-1)**
 - **38 GE EntryScan³ portals deployed**
 - **30 Smiths Detection Sentinel portals deployed**





FY2007 Requirements

- **R-2126 Mobile Screening System for Mail and Parcels**
- **R-2134 Suicide Bomber Detection**
- **R-2151 Screening of People for Explosives Using Canines**
- **R-2156 Vehicle Borne Improvised Explosive Device (VBIED) Detection**
- **R-2157 Handheld Explosives Trace Detector with Advanced Vapor Phase Sampling**



R-2126 Mobile Screening System for Mail and Parcels

- **Product:** Transportable system to screen large volume of mail and parcels to detect weapons, explosives, chemical, biological, and radiological threats
- **Conveyance:**
 - Truck/trailer divided into two rooms
 - Office-like work space for 3-5 persons
 - Self-contained with generator power
 - Meet Supplement to 2000 International Building Code for Mail Screening Facilities
 - Designed for decontamination
 - Ventilated



R-2126 Mobile Screening System for Mail and Parcels (cont'd)

➤ Explosives Detection

- **X-ray system capable of 300 inspections per hour**
- **Include explosives detection capability**

➤ Chemical/Radiological Detection

- **Integrate commercial off the shelf systems**



R-2126 Mobile Screening System for Mail and Parcels (cont'd)

➤ Biological Detection

- Develop system to continuously sample ambient air surrounding mail/parcels up to 8 cubic feet**
- Detect bacterial spores, vegetative cells, viruses, and toxins**
- Detection levels of 100 particles/L air or less in under 1 minute in a background at or above 1,000,000 particles/L air**
- Bioaerosol system shall be lightweight, low-power, and low-maintenance**



R-2134 Suicide Bomber Detection

- **Detect threats carried on body automatically**
 - **At distances of 2 meters or more**
 - **Remote capability**

- **Screen without impeding flow of traffic**
 - **Screen people moving through doors, entrances, or choke points**

- **Pose no health and safety risks to operators or people screened**



R-2151 Screening People for Explosives with Canines

- **Demonstrate techniques for screening large numbers of people and their possessions**
- **Screen unobtrusively and without impeding flow of traffic**
- **Must not appear threatening to the general public**
- **Develop training protocols for canines and handlers**
- **Address transition to existing canine programs**



R-2156 VBIED Detection





R-2156 VBIED Detection

- **Standoff or remote capability to detect explosives and ordnance in vehicles**
- **Concept of operations must provide maximum protection for operator(s)**
- **Suitable for tactical environment**
- **Non-intrusive**
- **Desire systems that do not use nuclear radiation or radioisotopes**



R-2157 Handheld Explosives Trace Detector with Advanced Vapor Phase Sampling

- **Sample and detect picogram levels of explosives**
 - **Simultaneous vapor and particle collection or within seconds**
 - **Prefer non-contact particle sampling**
 - **If ion mobility spectroscopy (IMS) is used, must have a dual mode (positive and negative ion) capability**
 - **Will not consider unproven technologies**



R-2157 Handheld Explosives Trace Detector with Advanced Vapor Phase Sampling (cont'd)

- **Develop a new system or adapt an existing one**
- **Hardened for extreme environments**
- **Cost comparable to existing explosive trace detection systems**
- **Must meet Transportation Security Administration certification levels for trace detection**



Subgroup Contact Information

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